



Year 7 Science Assessment and Progression Grid

	Biology	Chemistry	Physics	How Science Works
Excelling	<p>Organisms: Compare and contrast animal and plant cells. Recognises specialised cells, how they are adapted to function and can justify why they are animal or plant cells. Explains diffusion. Describe in detail how skeletal and muscular systems work and interact. Describe and explain the process of digestion in humans.</p> <p>Genes: Describe and fully explain the reproductive systems in plants and animals. Make links between the menstrual cycle, fertilisation and infertility problems. Explain fully environmental variation, genetic variation and the interaction between the two</p> <p>Ecosystems: Explain fully the concept of interdependence Compare and contrast aerobic and anaerobic respiration.</p>	<p>Matter: Recognise that all matter is made up of atoms and that there are 118 different types found in the periodic table. Use the particle theory to explain changes in state and relate these to energy levels of particles Evaluate the use of different methods of separation in different circumstances</p> <p>Reactions: Deep understanding of how reactants are rearranged during chemical reactants to form products. Can represent a myriad of reactions such as combustion, displacement and oxidation using word and symbol equations. Explain how the use of a range of indicators can determine whether a substance is acid, alkali or neutral. Quantify this by using UI. Compare and contrast exothermic and endothermic reactions</p> <p>Earth: Explain in detail how different types of rocks are formed and link them together to explain the rock cycle.</p>	<p>Energy: Explain how energy is transferred, stored, wasted and dissipated. Deep understanding of how energy costs are calculated in the home. Compare and contrast energy resources.</p> <p>Electromagnetism: Identify magnetic materials and use their properties to describe patterns of magnetic fields. Investigate how to increase the strength of an electromagnet. Describe electric current in both series and parallel circuits and explain how energy is transferred to electrical components.</p> <p>Forces: A full grasp of contact and on contact forces and their effects when balanced or unbalanced. Describe relative change in motion and calculate average speed.</p> <p>Waves: Describe the nature and behaviour of light.</p>	<p>Use scientific knowledge to decide how ideas and questions can be tested.</p> <p>Make predictions of possible outcomes. Identify and control the key factors that are relevant to a particular situation.</p> <p>Select and use appropriate equipment Use repeat measurements to reduce error and check reliability</p> <p>Present and interpret data through the routine use of tables, bar charts and line graphs</p> <p>Describe and explain results when drawing conclusions and relate these to scientific knowledge and understanding</p> <p>Evaluate the strength of evidence</p>
Secure	<p>Organisms: Recognise cells are the basic unit of life by drawing and describing animal and plant cells and explaining how some cells are adapted for function. Describes the function of the skeletal system and the antagonistic nature of muscles. Explain the concept of a balanced diet and the consequences if it is not. Describe the process of digestion in humans.</p> <p>Genes: Describe reproductive systems in plants and animals and stages of the menstrual cycle in humans. Distinguish between genetic and environmental variation</p> <p>Ecosystems: Explain that energy is transferred between organisms in food chains/webs Distinguish between aerobic and anaerobic respiration.</p>	<p>Matter: Recognise that all matter is made up of atoms and describe the arrangement of atoms in solids, liquids and gases. Relate the arrangement of atoms to the properties of solids liquids and gases and changes in state. Confidently describes and explains methods of separating mixtures.</p> <p>Reactions: Detailed description of how reactants are rearranged during chemical reactants to form products. Can describe a myriad of reactions such as combustion, displacement and oxidation. Can represent chemical reactions using word and symbol equations. Categorises substance as acid/alkali/neutral using and understanding of the pH scale and can explain neutralisation reactions. Explains changes in state with reference to energy levels of particles and whether a chemical reaction is exothermic or endothermic.</p> <p>Earth: Explain in how different types of rocks are formed and link them together to explain the rock cycle.</p>	<p>Energy: Describe a range of complex energy transfers and can use data to calculate efficiency. Describe why energy is always dissipated in energy transfers and offer suggestions for how energy can be conserved. Describe a range of energy resources.</p> <p>Electromagnetism: Identify magnetic materials and list their properties Identify ways to increase the strength of an electromagnet Use ideas of field lines to explain why other magnets or objects are attracted or repelled. Describe electric current in both series and parallel circuits and explain how energy is transferred to electrical components.</p> <p>Forces: Construct more complicated force diagrams to explain how the shape or motion of an object will change. Apply understanding of frictional and drag forces to a range of scenarios. Calculate the speed of objects, describe acceleration, and recognise the full range of types of motion on a distance-time graph.</p> <p>Waves: Describe how light is reflected by a mirror and can draw a ray diagram for a plane mirror. Classify objects as transparent, translucent or opaque. Explain how and why light changes direction when it passes into media of different densities</p>	<p>Identify the appropriate approach when trying to answer a question Make predictions of possible outcomes and select information from appropriate sources of evidence Identify and control the key factors that are relevant to a particular situation. Make a series of measurements with appropriate precision Use repeat measurements and offer explanations for differences in results Present and interpret data through the routine use of tables, bar charts and line graphs Identify patterns within results and use these when drawing conclusions Relate conclusions to scientific knowledge and understanding Identify limitations of the experiment and suggest ways to improve</p>



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Developing	<p>Organisms: Recognise cells are the basic unit of life by drawing and describing animal and plant cells. Identifies specialised cells by name and can explain how a couple are adapted for their job. Lists the role of the skeleton. Understands the role muscles play in the body and why some maybe stronger than others. Can describe some consequences of an unbalanced diet. Can fully label the digestive system and describe some of the process.</p> <p>Genes: Fully label the organs in the human reproductive systems and plants. List some stages of pregnancy and birth. Name methods of seed dispersal in plants. Link variation to inheritance from parents Simple explanation of why siblings look different to each other</p> <p>Ecosystems: Recognise that several food chains link together to form food webs. Summarise aerobic respiration in a word equation. Define aerobic respiration as 'with oxygen'</p>	<p>Matter: Describe the arrangement of an atom Describe how atoms are arranged in solids liquids and gases and relate this to some of their properties Can describe changes in state as a result of energy changes. Describe methods of separating mixtures.</p> <p>Reactions: Describes that reactants are rearrange into products during chemical reactions Lists a myriad of reactions such as combustion, displacement and oxidation. Can represent chemical reactions using word and sometimes symbol equations. Can use the pH scale to classify substances as strong/ weak acids and alkalis and neutral Explains changes in state with reference to energy levels of particles Distinguish whether a reaction is exothermic or endothermic</p> <p>Earth: Explain how different types of rocks are formed and link them together to describe the rock cycle.</p>	<p>Energy: Describe energy transfers where input energy is transferred as more than one type of energy. Identify the waste energy and explain why it is waste. List energy resources.</p> <p>Electromagnetism: Describe why other magnets or objects are attracted or repelled by a permanent magnet. State that the magnetic field around objects is composed of field lines and that these field lines flow from the north-seeking pole to the south-seeking pole. Describe how a permanent magnet is used as a compass. Describe a simple model of current flowing in a circuit.</p> <p>Forces: Draw simple force diagrams to explain how the shape or motion of an object will change. Draw a simple force diagram using a description of the forces on an object or of the changes taking place to an object's size, shape or motion. Calculate the speed of objects and can recognise a range of types of motion on a distance-time graph.</p> <p>Waves: Describe how light reflected by a plane mirror, the angle of reflection is equal to the angle of incidence. Describe the difference between opaque, transparent and translucent objects. Describe how light behaves when it passes from one medium to another</p>	<p>Use scientific knowledge to decide how ideas and questions can be tested.</p> <p>Make predictions where appropriate</p> <p>Identify and key factors that are relevant to a particular situation and suggest how to make it fair</p> <p>Measure quantities using a range of simple equipment Present data in bar charts and tables, begin to plot points for simple graphs</p> <p>Explain observations and simple patterns and begin to relate conclusions to these patterns</p> <p>Suggest improvements</p>
Emerging	<p>Organisms: Identify cells as animal or plant and name some features Identifies the main parts of the skeleton. Can name some muscles. Labels most organs in the digestive system and is aware of features of a healthy diet.</p> <p>Genes: Name some organs in the human reproductive systems Name some methods of seed dispersal in plants. Define variation and list ways we are the same/different</p> <p>Ecosystems: Draw simple food chains and use keywords to explain State that we breath in oxygen and combine it with sugar from our food to make energy</p>	<p>Matter: Draw the structure of an atom Draw solids, liquids and gases and list some of their properties Name the changes in state and say what some of them mean. Name methods of separation and recognise how some of them work</p> <p>Reactions: Name some physical and chemical changes Recognise that reactants go into chemical reactions and products come out Can represent some simple reactions with word equations Categorises substance as acid/alkali/neutral using an indicator Identify whether a reaction gives out heat energy, takes in heat energy</p> <p>Earth: List the different types of rocks Recognises some parts of the rock cycle</p>	<p>Energy: State that we pay for domestic electricity in our homes based on the amount of energy we use. Outline simple energy transfers and recognise that an energy transfer can be useful or waste.. Name some energy resources.</p> <p>Electromagnetism: Describe magnets can attract or repel and describe simply why the magnetic field can be turned on and off. Draw and construct a simple circuit and recognise that if there is a gap the current will not flow.</p> <p>Forces: State that an object with no force will be stationary or moving at a constant speed in a straight line. State that unbalanced forces cause an object to speed up, slow down or change direction. Recognise that friction slows objects down Know that straight line on a distance-time graph represents a constant speed.</p> <p>Waves: State that light travels in straight lines and describe the path of light in a ray diagram. Recognise that light changes direction when it passes into a material with a different density.</p>	<p>Simple suggestion for how to find things out Make a simple prediction....I think this will happen...</p> <p>With help, suggest the use of equipment</p> <p>Take some measurements when instructed how to do so</p> <p>Draw a simple bar chart</p> <p>Describe what happened and whether it was what they expected.</p>